18608-P001C2

PATENT

15

In re Application of: Brian Doege et al.

For: A METHOD FOR BACTERIALLY TREATING SMALL-TANK TOILET SYSTEMS AND AN APPARATUS FOR USING SAME

Atty Dkt: 23969-P001US

Serial No: 09/723,549

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Group Art Unit: 1724

Examiner: Chester T. Barry
703.306.5921

3-20-03

CERTIFICATE UNDER 37 C.F.R. 1.8

I hereby certify that this correspondence (along with any item referred as being enclosed herewith) is being deposited with the U.S. Postal Service as first class mail with sufficient postage in an envelope addressed to Box AF Amendment, Assistant Commissioner of Patents, Washington, D.C. 20231 on March 10, 2003.

GRACIE SOLIS

APPELLANTS' BRIEF IN SUPPORT OF APPEAL

Box AF
Assistant Commissioner for Patents
Washington, D. C. 20231

Dear Sir:

This brief is being submitted pursuant to 37 C.F.R. § 1.192. Appellants are furnishing herewith three (3) copies of this brief.

I. REAL PARTY-IN-INTEREST

The real party-in-interest is Biological Systems, Inc. ("Bio-Sys"), who is the assignee of the entire right and interest in the present Application.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to Appellants, the Appellants' legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 3-5, 8-20, 27-28, 39 and 42-48 are pending in the Application.

Claims 1-2, 6-7, 21-26, 29-38, and 40-41 have been cancelled without prejudice and disclaimer.

Claims 3-5, 8-20, 27-28, 39 and 42-48 stand rejected and are the subject of the instant appeal.

IV. STATUS OF AMENDMENTS

In the Examiner's Advisory Action, dated December 26, 2002 (Paper No. 13), Appellants' Amendment Under 37 C.F.R. § 1.116, filed November 26, 2002 (Paper No. 12), has been deemed by the Examiner as failing to place this Application in condition for allowance. Paper No. 13, at 1.

When doing so, the Examiner indicated that all but one of the rejections specified in the Examiner's prior Office Action (Paper No. 11) were overcome by Appellants' Amendment (Paper No. 12). Paper No. 13, at 1, ¶ 3. In particular Examiner maintained the rejection under 35 U.S.C. § 103(a) that was specified in Paper No. 11, at 9. *See* Paper No. 13, at 1, ¶ 3 & at 2.

V. SUMMARY OF THE INVENTION

The present invention relates in general to a method for bacterially treating recirculation tank toilet systems and an apparatus for using same, and in particular, bacterially treating recirculation tank toilet systems used in airplanes, busses, and trains.

A recirculation (or recirculating) tank toilet system is a toilet system in which the liquids are recovered from the toilet waste and thereafter reused to rinse the toilet bowl. *See, e.g.*, Application, at 11-12, & Figure 1A-1B. In such systems, the flushing liquids may be held or recirculated for a period of time; subsequently, the flushing liquids, including all materials collected in the system (*i.e.* the human waste products), are periodically drained from the system. Application, at 2. Thereafter, the system is recharged with fresh flushing liquid. Application, at 2.

Recirculation tank toilet systems, particularly those used in airplanes, busses, and trains, are different and encounter unique problems, as compared to septic tank systems (which are

stationary in the ground) and systems utilizing black water retention tanks (which are stationary during maintenance). Application, at 2-4. Rather, transportation recirculation tank toilet systems are filled and emptied in cycles ranging anywhere from hours to days, are constantly moving, and are constantly agitating the water to recycle flushing liquids through the toilet. *See, e.g,* Application, at 13-15 & Figures 2 & 3A-3C.

An improved process for treating a recirculation tank toilet system has been discovered in which a commercial bacterial agent bacteria, such as *Bacillus licheniformis, Pseudomonas florescens, Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida*, are used in combination with a surfactant and utilized in the flushing liquids for airplane, bus, and train, recirculation tank toilet systems. Application, at 5. Unlike the prior art that uses anti-bacterial agents, the improved process and apparatus severs the components of the grease molecules in the human waste products and breaks them into smaller sizes such that the enzymes produced by their bacteria can break down the grease molecules so that the bacteria can absorb the carbon atoms, which is the bacteria's basic food source. Application, at 5. The results of this destruction of the grease molecules break down the molecules, which then recombines as the simple byproducts: carbon dioxide, water soluble fatty acids, and water. Application, at 5.

Since the grease molecules are destroyed, they each cannot recombine downstream. Application, at 5. Because of this result, the resulting flushing liquid is more readily disposable since the resulting flushing liquid has sufficient qualities that allows it to be accepted in standard sewage systems. Application, at 5.

Moreover, because the grease molecules are destroyed, the odors of the material decomposition collecting in the flushing liquid are nearly, if not completely, eliminated because they are also broken down by the active bacteria. Application, at 5. It was discovered that the bacteria used in the absence of the surfactant would dissipate the odors of the grease molecules. However, gaseous ammonia is formed, as a byproduct of the process employed by the bacteria to break down the collected grease materials. Application, at 5. While not as prevalent in certain other tank toilet systems, these ammonia fumes were quite pungent in recirculation tank toilet systems. Application, at 5. The use of the surfactant in combination with the bacteria had the unexpected effect of neutralizing the ammonia odor. Application, at 5. It is believed the ammonium odors are neutralized because they are physically made more soluble in water by the

presence of the surfactants. Application, at 5-6. Because of these results, deodorizers and scents are not required, *i.e*, it is only optional that these be used. Application, at 6.

The present invention thus utilizes treating recirculation tank toilet systems with a combination of a bacteria, a surfactant, and, optionally, additional bacteria, surfactants, odor agents, coloring agents and other materials. Application, at 5-6. The bacteria/surfactant composition can be added to the flushing liquid in a airplane, bus, train recirculation tank toilet system in a solid block-tablet, liquid, or powder form. Application, at 5-6.

VI. ISSUE

Are claims 3-5, 8-20, 27-28, 39 and 42-48 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Bio-Sys's BMET-7 Product and/or BMTB-2010 Block and United States Patent No. 4,793,386 issued to Sloan ("*Sloan*")?

VII. GROUPING OF CLAIMS

Claims 3-5, 8-20, 27-28, 39, and 42-48 form a first group.

VIII. ARGUMENT

The Examiner has rejected Claims 3-5, 8-20, 27-28, 39, and 42-48 under 35 U.S.C. § 103(a) as obvious over the BMET-7 Product and/or BMTB-2010 Block prior sales and *Sloan*. Paper No. 11, at 9; *see also* Paper No. 13, at 1 & 2. The Appellants respectfully traverse these rejections.

A. Summary of Argument

None of the prior art references relied upon by the Examiner disclose a method utilizing or an apparatus comprising a "flushing liquid," a "recirculation tank toilet system," and a "tank toilet system selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems." Each of these are limitations of all claims at issue in the present appeal. As such, the prior art references do not alone or in combination disclose, teach, or suggest all of the limitations of any of the rejected claims. For each of these reasons alone, the Examiner's rejections should be reversed.

Furthermore, objective evidence shows the nonobviousness of the claims at issue in the present appeal. For this additional reason, the Examiner's rejections should also be reversed.

B. The Prior Art Underlying the Rejections

BMET-7 Product. The BMET-7 Product is a product of Bio-Sys. More than one year before the filing of the present Application, Bio-Sys sold a product, which it designated as its BMTC-7 Product; the technical data for this product was disclosed in Appellants' IDS, at Reference Designation APA ("Reference APA").[1] The BMTC-7 Product contains Bio-Sys's BMET-1 microbes, which, as noted in the Application, are microbes falling within the scope of the bacteria, as presently claimed in all claims in this Appeal. The BMTC-7 Product also includes a surfactant, which is used in a bacteria/surfactant weight ratio amount as presently recited within the claims on appeal that contain such limitations.

The BMTC-7 Product was created to improve the maintenance procedure for the 180-gallon holding tanks (also referred to as black water retention tanks) used to store toilet wastes on Amtrak's extended trip and transcontinental "Super Liners." The toilet tank systems utilized on these trains included a reservoir of fresh water that was connected to a number of toilets. Utilizing a pressurized flush system, each of these toilets would flush their contents into the black water retention tanks that was emptied at the end of each 4-5 day trip. A 120-day maintenance schedule was used to refurbish cars and toilets. Throughout the 120-day period, the toilets were used in normal operation (a 4-5 day use cycle before emptying). As the fresh water from the reservoir was used, the reservoir was replenished with more fresh water as needed for flushing. As the black water retention tank became filled the liquids (water, fecal material and urine, *etc.*), the liquids were drained. At no time during operation of this tank toilet system were the liquids in the black-water retention tank circulated for use as flushing liquids. As these toilets are normally under a vacuum (negative pressure), odors within coaches emanating from the toilets is not generally a problem. At the conclusion of the 120-day period, Amtrak would

[1] Reference APA further discloses Bio-Sys's BMTT-2010 product (which modified product is now designated as Bio-Sys' MTC-2010 product). Bio-Sys's MTC-2010 product is an embodiment of the claimed invention of the Application. So as there to be no confusion, Bio-Sys's BMTT-2010 product, including its disclosure in Reference APA, is not prior art to the present Application.

conduct a 120-day refurbishment of long-haul (transcontinental) passenger coaches, which include maintenance for the black water retention tanks.

Before Amtrak's use of Appellants' BMTC-7 Product, Amtrak cleaned its black water retention tanks by draining the liquids and then filling these black water retention tanks with a solution of acid. Amtrak would then let the black water retention tanks sit in the maintenance yard for a day or two. Appellants understand from discussions with Amtrak that it did so to remove sludgy build-up of fecal and tissue material that stuck to the holding tank walls (as this material was sucked into the tank at approximately 100 mph by the pressurized flush system). After a day or two, Amtrak would then drain the acid solution from the black water retention tank and clean the tank out. Once the black water retention tank was cleaned out, it was put back into service. From there, the cycle would repeat.

Bio-Sys's BMTC-7 product was designed, and is now used, as the soak-cleaner in Amtrak's black-water retention tanks. In lieu of using the acid solution, the BMTC-7 Product is used in the black water retention tanks during the procedure outlined above. The BMTC-7 Product is drained from the black water retention tanks before these tanks are put back in operation.

BMTB-2010 Block. The BMTB-2010 Block is also a product of Bio-Sys. More than one year before the filing of the Application, Bio-Sys sold time release blocks of microbes and enzymes designed for uses for grease traps, municipal lift stations, and septic tanks. Bio-Sys has designated this product as its BMTB-2010 Block. The technical data for this product was disclosed in Appellants' IDS, at Reference Designation ARA ("Reference ARA").

Bio-Sys's BMTB-2010 Block includes BMET-1 microbes. The BMTB-2010 Block also contains a surfactant. As disclosed in Reference ARA, additional surfactants are put into the grease traps and septic tanks with the BMTB-2010 block by the concurrent use of Bio-Sys's BMRT-3 surfactant,[2] which also contains the BMET-1 microbes. Like Bio-Sys's BMTC-7 Product, Bio-Sys's BMTB-2010 Block uses the bacteria and surfactant in a bacteria/surfactant

[2] Bio-Sys's BMRT-3 surfactant is a premium bacterial based cleaner designed for cleaning floors, such as in restaurants, cafeterias, and institutional kitchens. This product too has been sold by Bio-Sys more than one year before the filing of the Application.

weight ratio amount as presently recited within the claims on appeal that contain such limitations.

Sloan. *Sloan* discloses a method and apparatus using a portable pump to mix, remove, and dispose of fluid material, such as sewage, accumulated in a tank, such as a septic tank, storage pond, or the like. *Sloan, col.* 1, *ll.* 7-10. *Sloan* discloses an arrangement wherein the pump is connected to the septic tank to mix and recirculate waste material in the septic tank. *Sloan, col.* 11, *ll.* 55-65. *Sloan* also reflects a process by which the septic tank can be cleaned out by taking the fluid from the septic tank and injecting it under high pressure back into the septic tank. *Sloan, col.* 12, *ll.* 32-59. The purpose of these processes is to break up the crust that has accumulated in the septic tank such that the septic tank may be cleaned. *See, e.g., Sloan, col.* 2, *ll.* 8-11.

C. Examiner's Rejection

In Paper No. 11, the Examiner stated the following:

> Claims 3-5, 8-20, 27-28, 39, 42-48 are rejected under 35 USC. § 103(a) for obviousness over the BMET-7 and/or BMTB-2010 prior art sales and use in septic tanks, and Sloan's suggestion to recirculate the contents of a septic tank in the course of cleaning it out. A septic tank is a part of a toilet tank system.

Paper No. 11, at 9.

The Examiner's argument appears to premised on the basis that *Sloan*'s suggestion to recirculate the contents of a septic tank in the course of cleaning it out constitutes that Sloan discloses a flushing liquid and further discloses a recirculation tank toilet system. Paper No. 11, at 9. Such suggestions are misplaced.

Claim 42 is representative of the claims of Group one.

Claim 42 states:

42. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with **flushing liquid**, wherein the tank-toilet system is a **recirculation tank toilet system** and wherein the **tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems**; and

(c) combining the bacteria, the surfactant, and the flushing liquid.

Application, Claim 42 (emphasis added). Like Claim 42, all of the claims on appeal require that a flushing liquid be charged to the tank toilet system, that the tank toilet system be a recirculation tank toilet system, and that the tank toilet system be an airplane, bus, or train tank toilet system. *See* Claims 3-5, 8-20, 27-28, 39 and 42-48.

D. The BMET-7 Product, the BMTB-2010 Block, and *Sloan* do not alone or in combination disclose, teach, or suggest all of the limitations of any of the rejected claims.

As noted above, recirculation (or recirculating) tank toilet system is a toilet system in which the liquids are recovered from the toilet waste and thereafter reused to rinse the toilet bowl. *See, e.g.*, Application, at 11-12, & Figure 1A-1B. This term is well understood in the art of the Application. *See, e.g.,* United States Patent No. 3,567,032, issued to Kemper, United States Patent No. 3,776,107, issued to Molus, and United States Patent No. 5,045,188, issued to Tsai. Accordingly, *Sloan* does not disclose a recirculation tank toilet system. The fact that *Sloan* reflects a process by which the septic tank can be cleaned out by taking the fluid from the septic tank and injecting it under high pressure back into the septic tank (*Sloan, col.* 12, *ll.* 32-59) does not somehow convert the system in *Sloan* into a recirculation tank toilet system.

Moreover, claims must be interpreted as a whole. Here all claims require a flushing liquid be charged to a recirculation tank toilet system. A flushing liquid in a recirculation tank toilet system is the liquid that gets flushed in the system to rinse out the toilet bowl (*i.e.*, a flushing liquid, as used in the claims, is the liquid that is utilized during the act of flushing the toilet). In *Sloan*, the liquids in the septic tank are not flushing liquids, as these liquids are not used to flush a toilet.

Thus, the elements Examiner contends *Sloan* adds to BMET-7 Product and/or BMTB-2010 Block to render the claims at issue obvious are not disclosed or taught in *Sloan*.

Moreover, each of the BMET-7 Product, the BMTB-2010 Block, and *Sloan* further does not disclose a tank toilet system that is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems. These elements cannot be discounted or ignored. Persons of ordinary skill in the art of the Application would understand that recirculation tank toilet systems, particularly those used in airplanes, busses, and trains, are different and encounter unique problems, as compared to septic tank systems (which are

stationary in the ground) and systems utilizing black water retention tanks (which are stationary during maintenance). Rather, transportation recirculation tank toilet systems are filled and emptied in cycles ranging anywhere from hours to days, are constantly moving, and are constantly agitating the water to recycle flushing liquids through the toilet. In sum, these are different types of toilet systems.

Appellants note that the BMET-7 Product is used during the maintenance for black water retention tanks. In normal operation of the black water retention tanks (when they are not going through maintenance), these tanks are used in tank toilet systems on trains. (These tank toilet systems are not recirculating tank toilet systems). However, when the black water tanks are going through maintenance, the tanks are taken out of operation. Thus, they are not part of a train tank toilet system during maintenance. The significance of this is that the BMTC-7 Product is used as the soak-cleaner only during maintenance, *i.e.,* while the tanks sit in the maintenance yard for a day or two. Moreover, as noted above, the BMTC-7 Product is drained from the black water retention tanks before these tanks are put back in operation. Therefore, the BMTC-7 Product is utilized to clean a stationary holding tank, not a train tank toilet system.

Moreover, like *Sloan*, the BMET-7 Product and the BMTB-2010 are not used in recirculating tank toilet systems.

Similarly, as the BMET-7 Product is used during maintenance of the black water retention tank, the liquids in the tank are not used to flush a toilet during such maintenance. Furthermore, the BMTB-2010 Block is not used at all in a tank toilet system; the liquids in the grease traps, municipal lift stations, and septic tanks (to which the BMTB-2010 Block is used) are further not used to flush a toilet. Accordingly, neither the MBET-7 Product or the BMTB-2010 Block utilizes a flushing liquid as required by the claims. Furthermore, neither adds a bacteria and surfactant to a flushing liquid.

Accordingly, the BMET-7 Product, BMTB-2010 Block, and *Sloan*, individually or in combination, do not disclose all of the features of the claimed invention. Thus, the claimed invention is not obvious in view of these references.

E. The Objective Evidence of Nonobviousness Shows The Claimed Invention Is Not Obvious

1. Appellants' Evidence Shows the Nonobviousness of the Present Invention

The above shows that a *prima facie* case of obviousness has not been presented in view of the above references; moreover, objective evidence of nonobviousness further supports Appellants' assertion of nonobviousness. Appellants have submitted a Declaration of Brian Doege Under 37 C.F.R. § 1.132, dated August 2, 2002 (the "First 132 Declaration") showing, *inter alia*, Appellants' invention has enjoyed commercial success, has obtained unexpected results, has been professionally approved after initial skepticism by experts, has been copied by others, and has become an industry standard. First 132 Declaration, ¶¶ 1-11, 13-20;[3] *see also*, Second Declaration of Brian Doege Under 37 C.F.R. §§ 1.131 & 1.132, dated November 20, 2002 ("Second 132 Declaration"), ¶¶ 14 & 18-19.

Commercial Success. This objective evidence shows that the commercial success runs to geographically diverse channels of distribution, including both long haul passenger rail systems and commuter rail systems throughout the United States, such as New York and its surrounding area, Miami, and Dallas. First 132 Declaration, ¶¶ 8 & 15-18. Furthermore, the evidence shows that the commercial success is related to the conversion from bacteriacidal based products to the bacterial based product of the present invention. First 132 Declaration, ¶ 19. Accordingly, this success is attributable to the invention of the Application and cannot be attributed to business events extraneous to the merits of the claimed invention. MPEP § 716.03(b). This is further confirmed by the evidence reflecting the cost of the bacterial based product is more expensive then the previously used bacteriacidal based products. First 132 Declaration, ¶ 19.

Unexpected Results. Objective evidence further reflects that it was unexpected that the surfactant utilized in combination with bacteria would overcome the problems of using bacterial based products in transportation recirculation tank toilet systems. First 132 Declaration, ¶ 5; *see also* Application, at 5-6. Presence of an unexpected property evidences nonobviousness. *In re*

[3] The First 132 Declaration includes a statement in paragraph 12 that was later determined to be a misstatement. *See* Second Declaration of Brian Doege Under 37 C.F.R. §§ 1.131 and 1.132, dated November 20, 2002 (the "Second 132 Declaration"), ¶ 17. Accordingly, Appellant is not relying upon the statement of the First 132 Declaration"), ¶ 12, as evidence in this appeal.

Chupp, 816 F.2d 643, 645-46, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *see also* MPEP § 716.02(a).

Approval after skepticism. Objective evidence further reflects that the claimed invention has been professionally approved after initial skepticism by experts. First 132 Declaration, ¶¶ 10-11, 15, & 19. "Expressions of disbelief by experts constitute strong evidence of nonobviousness." MPEP § 716.05 (*quoting Environmental Designs, Ltd. v. Union Oil of Cal.*, 713 F.2d 693, 698, 218 U.S.P.Q. 865, 869 (Fed. Cir. 1983)). When Bio-Sys initially presented its bacterial based product for use to overcome problems in transportation recirculation tank toilet systems, the industry personnel whose job it was to test and procure such products were skeptical that a bacterial based product would be an effective treatment. First 132 Declaration, ¶ 10.

Appellants concur that prior testing had reflected problems with bacterial based products because the bacterial action generated gaseous ammonia, which was quite pungent and unpleasant for the users. First 132 Declaration, ¶ 5; *see also* Application, at 5. Prior art identified by Examiner further reflects such problems were known to exist when using bacterial based products. United States Patent No. 3,720,606 issued to Horney, *et al.* ("*Horney*") disclosed a deodorizing and sewage treatment formulation that included a bacteria and odor suppressing agent; *Horney* expressly utilized this odor suppressing agent so as to suppress and mask any undesirable odors. *Horney*, Abstract. As noted in the Application, suppressing and masking the odors does not rid the odors that develop in the flushing liquid, they merely attempt to overwhelm them. Application, at 4. Moreover, it is well known that, as more and more human waste products are collected in the system during a period, the masking properties of the deodorant or scent become less effective. Application, at 4. The present Application solved this odor problem by eliminating the odors through the concurrent use of a surfactant with the bacteria. Application, at 5-6. It is for this reason that a deodorizers and scents, while optional, are not necessary in the present invention. Application, at 5-6. That *Horney* is directed toward suppressing and masking these odors reflects the extent of this problem and confirms the skepticism initially directed to the invention of the Application.

However, once the present invention was tested, these same personnel deemed the bacterial based product to be a success and have indicated they recommended converting from a

bacteriacidal based product to a bacterial based product, notwithstanding the higher cost. First 132 Declaration, ¶¶ 11, 15, & 19; *see also* Second Declaration, ¶ 19. "The skepticism of an expert, expressed before these inventors proved him wrong, is entitled to fair evidentiary weight" of nonobviousness. MPEP § 716.05 (*quoting In re Dow Chemical, Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1532 (Fed. Cir. 1988)).

Copying. Objective evidence further reflects that copying of the present invention occurred after Bio-Sys introduced its product that embodies the present invention. First 132 Declaration, ¶ 20. At least three other companies have copied Appellants' bacterial based product for use in transportation recirculation tank toilet systems, including copying of this invention by the two largest United States producers of bacteriacidal based products. First 132 Declaration, ¶ 20. That these companies have completely deviated from their past bacteriacidal based products and are promoting bacterial based products strongly indicates the nonobviousness of the present invention. *Windsurfing Int'l Inc. v. AMF, Inc.*, 782 F.2d 995, 1000, 228 U.S.P.Q. 562, 565 (Fed. Cir. 1986).

Industry Standard. Objective evidence further reflects that Appellants' invention has become an industry standard. First 132 Declaration, ¶¶ 16-17. Metro North (one of the largest commuter railroad systems in North America, including one of the three railroad systems of the Metro Transit Authority, which services New York City and its surrounding areas) required all bidders to sell treatments for use in transportation recirculation tank toilet systems to utilize bacterial based products, and more particularly, specifically set the standard as Bio-Sys's MTC-2010-T product, an embodiment of the claimed invention. First 132 Declaration, ¶¶ 8, 16-17. Evidence that an invention has become an industry standard is again a compelling indication of nonobviousness. *In re Hayes Microcomputer Prods. Inc. Patent Litigation,* 982 F.2d 1527, 1540, 25 U.S.P.Q.2d 1241, 1251 (Fed. Cir. 1992); *see also Perkin-Elmer Corp. v. Computervision, Corp.*, 732 F.2d 888, 895, 221 U.S.P.Q. 669, 675 (Fed. Cir. 1984).

The Appellants respectfully assert that this objective evidence substantiates the nonobviousness of Appellants' invention.

2. Nothing Rebuts or Dispels Appellants' Evidence

The Examiner has presented no evidence to contradict or dispute this objective evidence. The First 132 Declaration was filed concurrently with Appellants' Second Amendment Under 37

C.F.R. § 1.111, filed August 14, 2002. The Examiner's subsequent Office Action (Paper No. 11) ignored this objective evidence when withdrawing the prior art rejections to which the evidence was directed.

In Paper No. 11, the Examiner raised, for the first time, the present §103(a) final rejection that is the subject of this appeal. *See* Paper No. 11, at 9.

In Appellants' amendment after final, Appellants relied again on this same objective evidence of nonobviousness. *See* Paper No. 12, at 7. In Examiner's advisory action, the Examiner addressed this evidence -- for the first time – and, *without any evidentiary basis*, challenged this objective evidence in a brief paragraph. Paper No. 13, at 2. By doing so, Examiner has improperly disregarded this evidence. MPEP § 716.01(a) ("Affidavits or declarations containing evidence of criticality or unexpected results, commercial success, long felt but unresolved needs, failure of others, skepticism of experts, etc., ***must*** be considered by the examiner in determining the issue of obviousness of claims for patentability under 35 U.S.C. 103") (emphasis added); *see also In re Sernaker*, 702 F.2d 989, 996, 217 U.S.P.Q. 1, 7 (Fed. Cir. 1983).

Commercial Success. First, Examiner disregards the evidence that reflects commercial success of the present invention. To do so, the Examiner states "[n]o sales figures are shown on the record." Paper No. 12, at 2. Contrary to Examiner's statement commercial success is not based upon the number of sales; rather commercial success may be established by substantial market share or by substantial growth of market share. *J.T. Eaton & Co. v. Atlantic Paste & Glue Co.,* 106 F.3d 1563, 1571, 41 U.S.P.Q.2d 1641, 1647 (Fed. Cir. 1997); *Medtronic, Inc., et al. v. Daig Corporation*, 789 F.2d 903, 907, 229 U.S.P.Q. 664, 668 (Fed. Cir. 1986).

Substantial market share and substantial growth of market share are precisely what Appellants showed in the First 132 Declaration. This evidence reveals that Metro North (again, one of the largest commuter railroad systems in North America, including one of the three railroad systems of the Metro Transit Authority, which services New York City and its surrounding areas), Miami Transit Authority, and Dallas Transit authority have each replaced their use of bacteriacidal based products for the use of the present invention (a bacterial based product) in their recirculation tank toilet systems. First 132 Declaration, ¶¶ 16-19; *see also* Third

132 Declaration, ¶ 5.[4] Moreover, Amtrak, the only national passenger railroad system in the United States, indicated that it plans to do so as well when its next bidding process occurs for treatment of its recirculation tank toilet system. First 132 Declaration, ¶ 15; Third 132 Declaration, ¶ 5. This reflects a fairly substantial amount of the market that has opted to utilize the present invention and a significant growth of such utilization of the present invention in the marketplace. This is particularly compelling given the greater product cost associated with the present invention versus the bacteriacidal based product previously utilized. First 132 Declaration, ¶ 19. Furthermore, given the lengthy procedures that are in place that are required so that a company converts to a new product in a recirculation tank toilet system, *i.e.*, testing, evaluating, and bidding, (First 132 Declaration, ¶¶ 9-10, 13-16; Second 132 Declaration, ¶¶ 18-19, 22-23, & 25-26), such growth of the present invention in the marketplace is even more substantial.

Industry Standard. Next, the Examiner states "Metro North's setting assignee's product as their 'standard' does not evidence adoption of applicant's product as an industry standard." Paper 13, at 2. Examiner understates the evidence. As noted above, Metro North is one of the three largest railroad commuter railroad systems in North America; it is, in fact, one of the three railroad systems of the Metro Transit Authority, which services New York City and its surrounding areas. First 132 Declaration, ¶ 8. This means one of the most significant members of the industry has set its standard as requiring the present invention or approved equivalent bacterial based product for bidding in the treatment of its recirculation tank toilet systems. First 132 Declaration, ¶ 8. Others in the industry also require bacterial based products to replace the prior art bacteriacidal products. *See* First 132 Declaration, ¶ 18. Furthermore, Amtrak, the only national passenger railroad in the United States has also indicated it intends to require a bacterial based product, rather than the bacteriacidal based product it is currently using, when it conducts

[4] Subsequent to the filing of the First 132 Declaration, Appellant was awarded the contract with Metro North. *See* Third Declaration of Brian Doege Under 37 C.F.R. § 1.132, dated March 10, 2003 (the "Third 132 Declaration"), ¶¶ 3-4. Since that time, Appellant has received significant sales to Metro North of the present invention. Third 132 Declaration, ¶¶ 3-4. The Third 132 Declaration has been submitted by Appellant after the filing of it Notice of Appeal; a showing of good and sufficient reasons under 37 C.F.R. §1.195 respecting this Third 132 Declaration is submitted herewith.

its next bidding process. First 132 Declaration, ¶¶ 8 & 15; *see also* Third 132 Declaration, ¶ 5. This evidences that an industry standard has become established.

Approval after skepticism. The Examiner further wishes to ignore the objective evidence that shows an approval after skepticism. The Examiner's stated reason for doing this is because the declarant, Brian Doege, is an interested party. Paper No. 13, at 2. Had Mr. Doege given opinion testimony, Examiner's assertion might be a challenge to the weight of such an opinion. However, Mr. Doege is reciting fact, not opinion. It is a fact that personnel at Amtrak, Metro North, and others commented that no other product like the present invention has ever been seen or marketed to them throughout their railroad careers for use in recirculation tank toilet systems, which careers spanned many years. First 132 Declaration, ¶ 9. It is further a fact that before testing at Amtrak, the personnel at Amtrak indicated they were very skeptical that a bacterial based product would be an effective treatment for a transportation tank toilet system. First 132 Declaration, ¶ 10. It is further a fact that notwithstanding this skepticism, the present invention was successfully tested. First Declaration, First 132 Declaration, ¶¶ 11 & 13; *see also*, Second 132 Declaration, ¶ 19.

As to the Examiner's challenge to the qualifications of the personnel of Amtrak and Metro North, and others making theses statements, this too is misplaced. The personnel making these statements were those that were charged by their respective companies with evaluating the products to be used by their companies; moreover, these personnel had careers in evaluating such products that spanned many years. These individuals were, perhaps, the best qualified to make such an evaluation. First 132 Declaration, ¶¶ 9, 10-11 & 13; *see also*, Second 132 Declaration, ¶ 19; Third 132 Declaration, ¶¶ 6-9.

Moreover, Appellants presented published materials and other factual bases that explain why there was skepticism that the claims invention would work. *See, e.g., Horney*; First 132 Declaration, ¶ 5; Application, at 4-6. The Examiner has ignored these.

Copying. Furthermore, the Examiner apparently wishes to ignore the evidence of copying by others by stating that perhaps these other companies "simply independently invented" it themselves. The facts do not support this supposition. These three companies began offering bacterial based products only after Metro North had approved Bio-Sys's product for use in its recirculation tank toilet system and called for such product in its RFP. First 132 Declaration, ¶

20; Third 132 Declaration, ¶ 10. Before such time, none of these three companies had ever offered a bacterial based product. First 132 Declaration, ¶ 20; Third 132 Declaration, ¶ 10. Two of these companies were the two largest producers of bacteriacidal products who have each marketed their products for over twenty years with no substantial changes; they had never offered a bacterial product before the Metro North bid. First 132 Declaration, ¶ 20; Third 132 Declaration, ¶ 10. A preponderance of the evidence would support copying rather than three companies virtually simultaneously and independently invented bacterial based products. Accordingly, the objective evidence reflects the present invention was copied by these three companies once they learned of Appellants' invention.

Unexpected Results. Lastly, the Examiner simply did not respond to Appellants' evidence of unexpected results.

In sum, all of this objective evidence "serve[s] as insurance against the insidious attraction of the siren hindsight" when evaluating the prior art. *W. L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). Thus, given the vast objective evidence that supports nonobviousness of the present invention, the Appellants respectfully assert this evidence substantiates the nonobviousness of Appellants' invention.

IX. CONCLUSION

For the reasons noted above, the rejection of claims 3-5, 8-20, 27-28, 39 and 42-48 is in error. Reversal of the rejections and allowance of the Application is respectfully requested.

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.

Attorneys for Appellants

By: _____

Ross Spencer Garsson
Reg. No. 38,150
5400 Renaissance Tower
1201 Elm Street
Dallas, Texas 75270-2199
(512) 370-2870

APPENDIX

3. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with flushing liquid, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) combining the bacteria, the surfactant, and the flushing liquid, wherein the bacteria is selected from the group consisting of *Bacillus licheniformis, Pseudomonas florescens, Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida* and wherein the weight ratio of the bacteria and the surfactant (weight of the bacteria:weight of the surfactant) charged to the tank toilet system is from about 10% to about 50%.

4. The method of claim 3 wherein the weight ratio (weight of the bacteria:weight of the surfactant) is from about 10% to about 30%.

5. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with flushing liquid; and

(c) combining the bacteria, the surfactant, and the flushing liquid, wherein the bacteria is selected from the group consisting of *Bacillus licheniformis, Pseudomonas florescens, Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida* and wherein the tank toilet system,

(i) is a recirculation tank toilet system, and

(ii) is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems.

8. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with flushing liquid, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) combining the bacteria, the surfactant, and the flushing liquid; and

(d) mixing the bacteria and surfactant into a composition before combining it with the flushing liquid, wherein said composition is a form selected from the group consisting of a liquid form, a powder form, and a solid block-tablet form.

9. The method of claim 8 further comprising the steps of:

(a) mixing a filler in the composition; and

(b) mixing a food source in the composition.

10. The method of claim 9 further comprising the steps of:

(a) mixing a deodorant in the composition; and

(b) mixing a coloring agent in the composition, wherein the filler is selected from the group consisting of calcium carbonate and sodium sulfate and the food source is dried brewers yeast.

11. The method of claim 9 wherein:

(a) the filler is mixed in the composition at least about 50% by weight;

(b) the food source is mixed in a range from about 0.1% to about 5% by weight;

(c) a deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight; and

(d) the bacteria and the surfactant are mixed in the composition in the range from about 5% to about 50% by weight.

12. The method of claim 9 wherein:

(a) the filler is mixed in the composition with the range from about 50% to about 80% by weight;

(b) the food source is dried brewers yeast in the composition in the range from about 1% to about 2% by weight;

(c) a deodorant is mixed in the composition in a range from about 0.2% to about 1% by weight; and

(d) the bacteria and the surfactant are mixed in the composition in the range of about 15% to about 20% by weight.

13. The method of claim 12 further comprising the step of combining a coloring agent with the bacteria and the surfactant, wherein the coloring agent is compatible with bacteria.

14. The method of claim 8 further comprising the steps of:

(a) mixing water in the composition;

(b) mixing an alcohol in the composition; and

(c) wherein the form of the composition is the liquid form.

15. The method of claim 14 wherein:

(a) the water is mixed in the composition at least about 50% by weight;

(b) the alcohol is mixed with a monoethanolamine, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant;

(c) the monoethanolamine is mixed with the alcohol, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant; and

(d) the bacteria and the surfactant are mixed with the alcohol and monoethanolamine in the range from about 20% to about 97% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant.

16. The method of claim 15 wherein:

(a) the alcohol is mixed with a monoethanolamine, the bacteria, and the surfactant in the range from about 5% to about 20% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant;

(b) the monoethanolamine is mixed with the alcohol, the bacteria, and the surfactant in the range from about 5% to about 15% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant; and

(c) the bacteria and the surfactant are mixed with the alcohol and monoethanolamine in the range from about 65% to about 90% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant.

17. The method of claim 9 further comprising the step of combining a binding agent with the bacteria and the surfactant.

18. A method for treating a tank toilet system comprising the steps of:

(a) removing a first flushing liquid from a tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(b) charging the tank toilet system with a second flushing liquid;

(c) selecting a bacteria, which bacteria is selected from the group consisting of *Bacillus licheniformis, Pseudomonas florescens, Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida*;

(d) selecting a surfactant for combining with the bacteria;

(e) charging the tank toilet system with the bacteria and the surfactant;

(f) repeating steps (a)-(e).

19. The method of claim 18 further comprising the steps of:

(a) combining a filler and a food source with the bacteria and the surfactant, wherein

(i) the filler is calcium carbonate and is combined with the food source, the bacteria, and the surfactant in an amount of at least about 50% by weight;

(ii) the food source is dried brewers and is combined with the filler, the bacteria, and the surfactant in a range from about 0.1% to about 5% by weight; and

(iii) the bacteria and the surfactant with the filler and the food source in a range from about 5% to about 50% by weight.

20. The method of claim 18 further comprising the steps of:

(a) combining water, alcohol, and monoethanolamine, with the bacteria and the surfactant, wherein

(i) water is combined with the alcohol, the monoethanolamine, the bacteria, and the surfactant, by at least about 50% by weight;

(ii) the alcohol is combined with the monoethanolamine, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant;

(iii) the monoethanolamine is combined with the alcohol, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant; and

(iv) the bacteria and the surfactant are combined with the alcohol and monoethanolamine in the range from about 20% to about 97% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant.

27. An apparatus for treating human waste products comprising:

(a) a tank toilet system;

(b) a flushing liquid charged into the tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) a bacteria and a surfactant combined with the flushing liquid; and

(d) a filler and a food source combined with the bacteria and the surfactant, wherein

(i) the filler is calcium carbonate and is combined with the food source, the bacteria, and the surfactant in an amount of at least about 50% by weight;

(ii) the food source is dried brewers yeast and is combined with the filler, the bacteria, and the surfactant in a range from about 0.1% to about 5% by weight; and

(iii) the bacteria and the surfactant with the filler and the food source in a range from about 5% to about 50% by weight.

28. An apparatus for treating human waste products comprising:

(a) a tank toilet system;

(b) a flushing liquid charged into the tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) a bacteria and a surfactant combined with the flushing liquid; and

(d) water, alcohol, and monoethanolamine, combined with the bacteria and the surfactant, wherein

(i) water is combined with the alcohol, the monoethanolamine, the bacteria, and the surfactant, by at least about 50% by weight;

(ii) the alcohol is combined with the monoethanolamine, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant;

(iii) the monoethanolamine is combined with the alcohol, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant; and

(iv) the bacteria and the surfactant are combined with the alcohol and monoethanolamine in the range from about 20% to about 97% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant.

39. An apparatus for treating human waste products comprising:

(a) a tank toilet system, wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems; and

(b) a flushing liquid charged into the tank toilet system, wherein the tank toilet system is a recirculation tank toilet system;

(c) a bacteria charged into the tank toilet system for decomposing human waste product in the tank toilet system to form byproduct; and

(d) a surfactant charged into the tank toilet system, wherein the bacteria and surfactant are combined with the flushing liquid in an amount capable of neutralizing the byproduct odor.

42. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with flushing liquid, wherein the tank-toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems; and

(c) combining the bacteria, the surfactant, and the flushing liquid.

43. The method of claim 42 wherein the tank toilet system has a capacity at most about 120 gallons.

44. A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with a flushing liquid, wherein the tank toilet system is a recirculation tank toilet system, wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) combining the bacteria and the surfactant with the flushing liquid;

(d) monitoring the tank system to determine the flushing liquid should be removed;

(e) removing the flushing liquid in response to the determining step; and

(f) repeating steps (a)-(e).

45. The method of claim 44 wherein the monitoring step comprises inspecting level of liquid in the tank toilet system.

46. The method of claim 44 wherein the monitoring step is a time basis.

47. The method of claim 46 wherein the time basis is at most three days.

48. The method of claim 44 wherein the monitoring step is a trip basis.